

What is claimed is:

1. A refrigerant cycle comprising:

a compressor for compressing refrigerant;

a high-pressure heat exchanger for radiating heat of high-pressure refrigerant discharged from the compressor;

a low-pressure heat exchanger for evaporating low-pressure refrigerant after being decompressed;

an ejector including a nozzle for decompressing and expanding refrigerant flowing from the high-pressure heat exchanger by converting pressure energy of refrigerant to speed energy of the refrigerant, and a pressure-increasing portion that is disposed to increase a pressure of refrigerant by converting the speed energy of refrigerant to the pressure energy of refrigerant while mixing refrigerant injected from the nozzle and refrigerant sucked from the low-pressure heat exchanger; and

a gas-liquid separator for separating refrigerant from the ejector into gas refrigerant and liquid refrigerant, the gas-liquid separator having a gas refrigerant outlet coupled to a refrigerant suction side of the compressor, and a liquid refrigerant outlet coupled to a refrigerant inlet side of the low-pressure heat exchanger; and

a control valve disposed in a bypass passage through which a part of refrigerant from the high-pressure heat exchanger flows into a low-pressure refrigerant passage between the low-pressure heat exchanger and a suction port of the ejector,

wherein the control valve opens the bypass passage so that refrigerant flows through the bypass passage when a pressure of

the refrigerant from the high-pressure heat exchanger becomes in a predetermined condition.

2. The refrigerant cycle according to claim 1, wherein the control valve includes

a housing for defining a part of a high-pressure refrigerant passage from the high-pressure heat exchanger to the nozzle of the ejector;

a valve port through which the high-pressure refrigerant passage communicates with the bypass passage;

a case member for forming a seal space in which a gas refrigerant is sealed by a predetermined density, the seal space being placed in the high-pressure refrigerant passage of the housing;

a displacement member that displaces in accordance with a pressure difference between inside and outside of the seal space; and

a valve body that opens and closes the valve port in accordance with a displacement of the displacement member, and

the displacement member moves in a direction for opening the valve port, when a pressure in the high-pressure refrigerant passage is higher than the inside pressure of the seal space.

3. The refrigerant cycle according to claim 1, wherein the control valve is disposed to open the bypass passage, when a pressure difference between a pressure of refrigerant flowing from the high-pressure heat exchanger at a position upstream from the

control valve and a pressure of refrigerant at an outlet side of the low-pressure heat exchanger at a position downstream from the control valve is larger than a predetermined value.

4. The refrigerant cycle according to claim 1, further comprising

an inner heat exchanger for performing a heat exchange between refrigerant to be sucked into the compressor and refrigerant flowing from the high-pressure heat exchanger, wherein the control valve includes

a housing for defining a part of a first high-pressure refrigerant passage through which refrigerant from the high-pressure heat exchanger flows to the inner heat exchanger, and for defining a part of a second high-pressure refrigerant passage through which refrigerant from the inner heat exchanger flows to the nozzle of the ejector;

a valve port through which the second high-pressure refrigerant passage communicates with the bypass passage;

a case member for forming a seal space in which a gas refrigerant is sealed by a predetermined density, the seal space being placed at least in the first high-pressure refrigerant passage of the housing;

a displacement member that displaces in accordance with a pressure difference between inside and outside of the seal space; and

a valve body that opens and closes the valve port in accordance with a displacement of the displacement member, and

the displacement member moves in a direction for opening the valve port, when a pressure in the first high-pressure refrigerant passage is higher than the inside pressure of the seal space.

5. The refrigerant cycle according to claim 1, wherein the ejector and the control valve are integrated to form an integrated member.

6. The refrigerant cycle according to claim 1, further comprising

a check valve, disposed in a refrigerant passage from a liquid refrigerant outlet of the gas liquid separator to a join point where the bypass passage is joined with the low-pressure refrigerant passage, for preventing refrigerant from reversely flowing.

7. The refrigerant cycle according to claim 1, further comprising

a switching valve, disposed between an outlet of the ejector to the gas-liquid separator, for switching a refrigerant flow from the outlet of the ejector to the gas-liquid separator, wherein, when the control valve opens the bypass passage, the switching valve closes the refrigerant flow from the outlet of the ejector to the gas-liquid separator.

8. The refrigerant cycle according to claim 1, wherein the control valve decompresses refrigerant when being opened.

9. The refrigerant cycle according to claim 1, wherein the high-pressure refrigerant discharged from the compressor has a pressure equal to or higher than the critical pressure of the refrigerant.